

# INTRODUCTION

A few words about how this book is arranged will make it easier to use. Familiarity with the following guidelines will assist you in locating the conversion you need.

Conversions in this book are listed alphabetically. Each unit for which a conversion factor is given appears once in the first (MULTIPLY BY) column of the table. The unit is omitted from the first column for subsequent conversions of that unit.

In addition to being listed alphabetically, units by themselves are listed before their compound units (i.e., dynes comes before dyne-cm). Specifically, single units are given first (e.g., feet), units divided by another unit come next (e.g., feet/sec), and units multiplied by another unit are last (e.g., foot-lbf). Units in the third (TO OBTAIN) column of the table are alphabetized in the same manner.

During the planning stage for this book, it was difficult to come up with a standard presentation of the units in a form that all engineers would recognize and that would lend itself to an aesthetic page layout. Abbreviations and symbols commonly used by engineers were too brief and left too much room for interpretation. However, space limitations did not allow for spelling out the name of each unit in its entirety, so a compromise was made. Units are spelled out up to a slash (representing “per”) or hyphen (for compound units), at which point common abbreviations are used.

For example, the metric unit of power is listed as “watts.” Watts per hour is listed as “watts/hr” (watts is the sole numerator). The compound unit watt-hours per kilogram is listed as “watt-hr/kg.”

The convention of spelling out units means that some units will not appear in their most common forms. Pounds per square inch is found under “pounds/in<sup>2</sup>,” and not under the commonly used abbreviation “psi.” Cubic feet (most commonly represented as ft<sup>3</sup>) is in the “C” section listed under “cubic feet,” and not in the “F” section under “ft<sup>3</sup>” or “feet cubed.” However, ft<sup>3</sup> is the abbreviation used when cubic feet appears after a hyphen in a compound unit (e.g., poise-ft<sup>3</sup>/lbm) or after a slash (e.g., gallons/ft<sup>3</sup>). Similarly, square feet is found in the “S” section.

Abbreviations used in this book and their meanings are listed in the following table.

abbrev.	meaning	abbrev.	meaning
accel.	acceleration	IST	international steam tables
amp	ampere	kg	kilogram
amu	atomic mass unit	KS	Kansas
atm	atmosphere	L	liter
avoir	avoirdupois	lbf	pound (force)
AZ	Arizona	lbm	pound (mass)
BeV	billion electron volts	m	meter
Btu	British thermal unit	MeV	million electron volts
C	Centigrade	MGD	million gallons per day
CA	California	mi	mile
cal	calorie	min	minute
CHU	caloric heat unit	mL	milliliter
cm	centimeter	mm	millimeter
CO	Colorado	MT	Montana
F	Fahrenheit	ND	North Dakota
ft	feet	NE	Nebraska
g	gram	NM	New Mexico
g	gravity	NV	Nevada
gal	gallon	OR	Oregon
GeV	giga electron volts	ppm	parts per million
gpd	gallons per day	SD	South Dakota
H <sub>2</sub> O	water	sec	second
Hg	mercury	thermo	thermodynamics
hr	hour	U.S.	United States
ID	Idaho	UT	Utah
in	inch	wt	weight
int'l	international	yd	yard

### *A Note for Engineers in the United States*

U.S. engineers may, at first, find it confusing when they see how many different types of barrels and tons (and many other units listed in this book) there are. When a U.S. petroleum engineer says "barrel," 42 gallons is implied. The normal quantities used in the U.S. are:

atmosphere	standard atmosphere
barrel	31.5 gallons (U.S., liquid)
barrel	42 gallons (petroleum)
Btu	traditional (thermochemical) value
calories	thermochemical
gallons	U.S., liquid
horsepower	U.S. or mechanical
ounces	avoirdupois
pints	U.S., liquid
pounds	avoirdupois
quarts	U.S., liquid
tons	short tons of 2000 pounds